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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,284	12/20/2001	Kei Tomihara	249-244	7654

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EXAMINER	
YUAN, DAH WEI D	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/022,284	TOMIHARA ET AL.	
	Examiner	Art Unit	
	Dah-Wei D. Yuan	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9 and 11-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9 and 11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

CADMIUM NEGATIVE ELECTRODE FOR ALKALINE STORAGE BATTERY METHOD FOR PRODUCING THE SAME

Examiner: Yuan S.N. 10/022,284 Art Unit: 1745 June 14, 2005

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 15, 2005 has been entered. Claims 9,11,12 were amended. Claim 10 was canceled.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on December 21, 2004.

Claim Rejections - 35 USC § 103

3. Claims 9,11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stiker et al. (US 4,180,441) in view of Oshitani (JP 56-35368) and Treger et al. (US 6,514,637 B2).

With respect to claims 9,11-14, Stiker et al. teach a process of producing a cadmium negative electrode for use in an alkaline battery wherein a conductive porous support or core is repeatedly immersed, consisting of immersing a sintered nickel, in melted cadmium nitrate, and thereafter, in an aqueous solution of an alkaline metal hydroxide which transforms the nitrate into cadmium hydroxide (β-$Cd(OH)_2$). The pores of the cadmium hydroxide conductive support

forming the active material are thereby filled up. The two immersion operations, including drying between the immersions, are repeated several times for providing a sufficient deposit of active material. See Column 1, Lines 8-28.

However, Stiker et al. do not teach the application of polyethylene glycol coating covering a surface of said cadmium active material. Oshitani teaches a cadmium electrode for use in an alkaline battery. The electrode is coated with polyethylene glycol as a corrosion inhibitor. The resulting electrode is then dried at 80-100°C for 10 to 15 minutes. See Abstract; Column 5. Therefore, it would have been obvious to one of ordinary skill in the art to coat the cadmium negative electrode of Stiker et al. with polyethylene glycol, because Oshitani teaches the use of said coating to prevent corrosion of the negative electrode active material.

Moreover, Stiker et al. and Oshitani do not specifically discuss the molecular weight of the polyethylene glycol used. Treger et al. teach the coating of electrode surface with a liquid in an alkaline battery. The material may be a liquid at elevated temperature but turns solid at room temperature. The coating material is first heated so that it liquefies with low viscosity so that it becomes castable or coatable onto the surface of the electrode. Suitable material, such as polyethylene glycol having a molecular weight greater than 900, preferably greater than 1500, is used. The disclosure of Treger et al. differs from Applicant's claims in that Treger et al. do not disclose the polyethylene glycol having a mean molecular weight of 600 or higher but not more than 20000. However, Treger et al. recognize the importance of viscosity on the coatability of the polyethylene glycol on the battery electrode. See Column 18, Lines 30-42. Therefore, it would have been within the skill of the ordinary artisan to coat the cadmium negative electrode

with polyethylene glycol having a mean molecular weight of 600 or higher but not more than 20000, because Treger et al. teach the molecular weight (viscosity) is critical to the coatability of the compound onto the battery electrode. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claims 15,16, Stiker et al. further teach the alkaline battery comprising a nickel positive electrode, a separator and an alkaline electrolyte. See Column 1, Lines 8-28.

4. Claims 9,11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (JP 63-160161) in view of Oshitani (JP 56-35368) and Treger et al. (US 6,514,637 B2).

With respect to claims 9,11-14, Kobayashi teaches an alkaline battery wherein a porous sintered nickel substrate in a mixture solution of nickel nitrate and cobalt nitrate, drying, and immersing in a cadmium nitrate solution, drying, then immersing in an alkaline solution to form an active material of cadmium hydroxide (β-$Cd(OH)_2$). See Abstract. Kobayashi does not specifically disclose the formation of cadmium hydroxide after subjecting the sintered nickel body to alkali treatment. However, it is the position of the examiner that such characteristics are inherent, given that both Kobayashi and the present application utilize the similar manufacturing procedures. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference.* In re Robertson, 49 USPQ2d 1949 (1999).

However, Kobayashi does not teach the application of polyethylene glycol coating covering a surface of said cadmium electrode active material. Oshitani teaches a cadmium electrode for use in an alkaline battery. The electrode is coated with polyethylene glycol as a corrosion inhibitor. The resulting electrode is then dried at 80-100°C for 10 to 15 minutes. See Abstract; Column 5. Therefore, it would have been obvious to one of ordinary skill in the art to coat the cadmium negative electrode of Kobayashi with polyethylene glycol, because Oshitani teaches the use of said coating to prevent corrosion of the negative electrode active material.

Moreover, Kobayashi and Oshitani do not specifically discuss the molecular weight of the polyethylene glycol used. Treger et al. teach the coating of electrode surface with a liquid in an alkaline battery. The material may be a liquid at elevated temperature but turns solid at room temperature. The coating material is first heated so that it liquefies with low viscosity so that it becomes castable or coatable onto the surface of the electrode. Suitable material, such as polyethylene glycol having a molecular weight greater than 900, preferably greater than 1500, is used. The disclosure of Treger et al. differs from Applicant's claims in that Treger et al. do not disclose the polyethylene glycol having a mean molecular weight of 600 or higher but not more than 20000. However, Treger et al. recognize the importance of viscosity on the coatability of the polyethylene glycol on the battery electrode. See Column 18, Lines 30-42. Therefore, it would have been within the skill of the ordinary artisan to coat the cadmium negative electrode with polyethylene glycol having a mean molecular weight of 600 or higher but not more than 20000, because Treger et al. teach the molecular weight (viscosity) is critical to the coatability of the compound onto the battery electrode. *Discovery of optimum value of result effective variable*

in known process is ordinarily within skill of art. In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claims 15,16, Kobayashi further teach the alkaline battery comprising a nickel positive electrode, a separator and an alkaline electrolyte. See Abstract.

Response to Arguments

5. Applicant's arguments filed on April 15, 2005 have been fully considered but they are not persuasive.

Applicant's principle arguments are

The coating of the polyethylene glycol is formed on both of the surfaces of the electrode substrate and the cadmium active substance.

In response to Applicant's arguments, please consider the following comments.

Stiker et al. teach a process of producing a cadmium negative electrode for use in an alkaline battery as stated above. The polyethylene glycol coating is then applied on the resulting electrode to improve the corrosion resistance thereof. The polyethylene glycol would inevitably cover both the surfaces of electrode substrate and cadmium active substance. Similarly, Kobayashi teaches the formation of cadmium hydroxide after subjecting the sintered nickel body to alkali treatment. The subsequent application of polyethylene glycol coating would invariably conceal both the surfaces of electrode substrate and cadmium active substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
June 14, 2005

DAH-WEI YUAN
PRIMARY EXAMINER